Section II

Boating Accident Program

This section summarizes 2000 boating accident statistics. Law enforcement agencies, the United States Coast Guard, educational institutions, and California boaters use these statistics to help improve boating safety.

A. Limitations of the Analysis

Reportable Accidents

The statistics in this report reflect every **reported** boating accident in California in 2000. Although the Department believes that all accidents involving fatalities were reported, many non-fatal accidents are never reported to the Department or law enforcement agencies due to noncompliance with, or ignorance of, the reporting law. The U.S. Coast Guard estimates that only about 10% of accidents are actually reported to state programs nationwide, while the Red Cross estimates that only 2.5% are reported.

An increase in the number of reported accidents from year to year might not necessarily reflect an increase in the actual number of accidents, but rather might result from improved reporting efforts or follow-up research from other sources (e.g., newsclippings). To improve the accuracy of accident statistics, the Department has increased its efforts to obtain all accident reports by working closely with law enforcement agencies.

Accident Statistics

A total of 906 accidents were reported to the Department in 2000. Some statistics in this report are measured as a percentage of these total accidents. Often, there is more than one cause of an accident, more than one operator involved in an accident, or more than one vessel involved. Therefore, the number of vessels, like the number of operators involved in accidents, usually exceeds

the number of accidents. A total of 1,288 operators were involved in boating accidents in 2000. Many statistics presented in this report are measured as a percentage of the number of operators involved or the number of causes—rather than the 906 accidents—in order to provide more accurate comparisons.

Alcohol Use

Analysis of alcohol-related accidents can be difficult for the following reasons:

- **Delayed Accident Reporting**—Often there is significant delay between the time of the accident and the reporting of the accident to law enforcement agencies. Delays can happen for a variety of reasons including emergency care needs and the desire to avoid legal consequences. (Operators/ passengers are reluctant to report themselves as being under the influence of alcohol or drugs.) Unfortunately, these delays can result in the loss of accurate data due to alcohol burn-off.
- **Delayed Body Recovery**—Sometimes, the bodies of boating accident victims are not recovered immediately. A delay of more than two days in recovering a body can result in significantly altered blood alcohol levels due to the process of decomposition, a by-product of which is blood alcohol.

39% of boating fatalities in 2000 could not be tested for alcohol for the above reasons.

B. 1999 Accident Summary

Findings

The 906 accidents reported to the Department during 2000 involved 524 injuries, 51 fatalities, and $3 million in property damage. The total number of reported accidents remained virtually unchanged (907) while the number of injuries, fatalities and the total property damage were higher than 1999 totals, (491, 42, and $2.8 million, respectively).

Exhibit II-1 (on page 13) presents boating accident statistics in California from 1980 through 2000.

Exhibit II-2 (starting on page 14) presents 2000 boating accident statistics by county.

Type and Cause of Accidents

Exhibit II-3 (on page 16) presents types and causes of accidents by vessel type. Overall, the most common type of accident involved collision with another vessel (38%). Open motorboats and personal watercraft were the most common types of vessels involved in accidents and were involved in 51% and 32% of accidents respectively. The most common type of accident involving open motorboats was collision with another vessel (28%), followed by accidents involving skier mishaps (23%). Most accidents involving PWC were collisions with other vessels (67%), followed by falls overboard (17%).

The most frequently stated causes of accidents overall were operator inexperience (42%), operator inattention (32%), and excessive speed (24%). (A boating accident can have more than one attributable cause.)

Exhibit II-1
1980-2000 Boating Accidents in California*

Year	Number of Accidents	Number of Injuries	Number of Fatalities	Amount of Property Damage
1980	657	270	112	$2,039,800
1981	728	319	87	$3,655,630
1982	696	323	103	$2,497,000
1983	648	333	95	$3,713,100
1984	791	341	93	$2,491,700
1985	869	403	76	$4,246,400
1986	741	319	68	$2,645,500
1987	905	325	54	$3,381,600
1988	745	333	51	$2,396,100
1989	632	371	43	$3,669,800
1990	761	416	50	$3,131,200
1991	750	421	58	$2,653,800
1992	689	447	59	$4,360,100
1993	743	434	67	$2,052,800
1994	709	386	40	$1,740,300
1995	833	490	52	$2,536,500
1996	850	537	56	$2,241,700
1997	925	526	43	$3,266,800
1998	772	413	58	$2,299,600
1999	907	491	42	$2,864,000
2000	906	524	51	$3,038,400

* *An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; damage to a vessel or other property damage exceeds $500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.*

Exhibit II-2
2000 Boating Accidents by County*

County	Number of Accidents	Number of Injuries	Number of Fatalities	Amount of Property Damage
Alameda	11	3	2	$11,300
Amador	5	3	1	$9,600
Butte	18	12	0	$25,200
Calaveras	35	25	2	$97,800
Colusa	4	1	0	$3,800
Contra Costa	31	14	1	$631,450
Del Norte	3	0	0	$317,800
El Dorado	16	12	0	$26,800
Fresno	17	6	1	$53,550
Glenn	1	1	0	$2,600
Humboldt	3	3	1	$2,300
Imperial	11	6	0	$29,350
Kern	1	0	0	$1,600
Lake	16	15	1	$12,900
Lassen	1	0	1	$0
Los Angeles	99	48	2	$198,300
Madera	9	8	0	$8,100
Marin	11	0	2	$69,200
Mariposa	3	2	0	$2,000
Mendocino	1	0	1	$550
Merced	1	2	0	$0
Modoc	1	0	3	$0
Mono	1	2	0	$0
Monterey	9	2	1	$24,350
Napa	29	21	1	$74,100
Nevada	4	2	0	$7,700
Orange**	46	8	0	$128,100
Placer	26	13	0	$54,800

* *An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; damage to a vessel or other property damage exceeds $500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.*

** *The increase in boating accidents in Orange County when compared with accident totals appearing in reports prior to 1999 is not due to an increase in accidents, but rather an increase in the reporting of accidents to the Department.*

Exhibit II-2 *(continued)*
1980-2000 Boating Accidents by County*

County	Number of Accidents	Number of Injuries	Number of Fatalities	Amount of Property Damage
Plumas	4	3	1	$0
Riverside	27	26	2	$35,900
Sacramento	10	4	2	$26,100
San Bernardino	73	53	5	$202,900
San Diego	81	48	1	$189,550
San Francisco	7	2	1	$58,100
San Joaquin	63	33	3	$151,600
San Luis Obispo	17	7	2	$32,450
San Mateo	4	3	0	$2,000
Santa Barbara	6	1	0	$16,100
Santa Clara	14	15	1	$45,050
Santa Cruz	6	1	2	$9,750
Shasta	51	37	0	$94,450
Sierra	1	0	1	$0
Siskiyou	2	1	0	$550
Solano	15	11	3	$35,300
Sonoma	6	1	0	$23,000
Stanislaus	12	8	0	$48,800
Sutter	4	4	0	$14,000
Tehama	4	0	0	$10,500
Trinity	15	13	2	$0
Tulare	9	5	0	$27,100
Tuolumne	33	23	2	$115,450
Ventura	15	5	3	$54,600
Yolo	5	5	0	$26,800
Yuba	9	6	0	$25,100
TOTAL	**906**	**524**	**51**	**$3,038,400**

* *An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; damage to a vessel or other property damage exceeds $500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.*

** *The increase in boating accidents in Orange County when compared with accident totals appearing in reports prior to 1999 is not due to an increase in accidents, but rather an increase in the reporting of accidents to the Department.*

Exhibit II-3
Types and Causes of Accidents by Vessel Type

	Open Motorboats		Personal Watercraft		Other Vessels		All Vessels	
Types of Accidents	Collision with Other Vessel	28%	Collision with Other Vessel	67%	Collision with Other Vessel	43%	**Collision with Other Vessel**	**38%**
	Skier Mishap	23%	Falls Overboard	17%	Grounding	12%	**Skier Mishap**	**12%**
	Flooding/ Swamping	14%	Grounding	5%	Flooding/ Swamping	11%	**Grounding** **Flood/Swamp**	**10%** **10%**
Causes of Accidents	Operator Inattention	33%	Operator Inexperience	61%	Operator Inexperience	39%	**Operator Inexperience**	**42%**
	Operator Inexperience	27%	Excessive Speed	50%	Operator Inattention	29%	**Operator Inattention**	**32%**
	Excessive Speed	18%	Operator Inattention	42%	Hazardous Weather/Water	16%	**Excessive Speed**	**24%**

The leading causes of accidents involving open motorboats were operator inattention and operator inexperience. The leading causes of accidents involving PWC were operator inexperience and excessive speed. Overall, these causes were consistent with previous years.

Time and Location

Accidents occurred mostly during the summer months (May through September), on weekends, between 2:00 p.m. and 4:00 p.m.

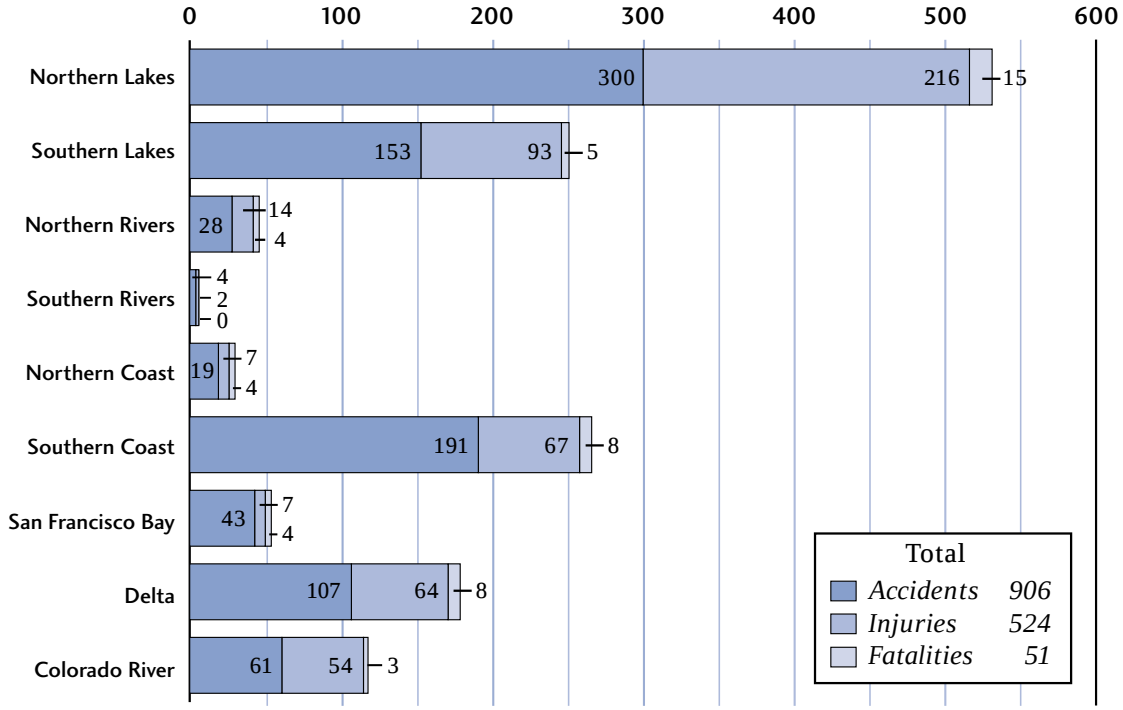
Of the 906 boating accidents, 178 (20%) occurred during the three holiday periods of Memorial Day, Independence Day, and Labor Day.

Exhibit II-4 (on page 17) presents the accidents, injuries, and fatalities by location. Overall, most accidents and injuries occurred on lakes, 50% and 59% respectively, and more occurred on northern lakes.

Vessel Type and Length

In 2000, open motorboats accounted for approximately 53% of all vessels registered in California, and PWC accounted for 19%. Open motorboats were involved in 51% of all accidents and PWC were involved in 32% of all accidents. This indicates that PWC were involved in a disproportionately high number of accidents. However, the number

Exhibit II-4
2000 Boating Accidents by Location*



* *An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; damage to a vessel or other property damage exceeds $500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.*

of PWC involved in accidents has decreased substantially in the last three years and is down 25% since 1997, when accidents involving these vessels were at an all-time high of 391. Most vessels (73%) involved in accidents were less than 26 feet long.

Exhibit II-5 (on page 18) presents registration and accident statistics for open motorboats, PWC, and other vessels during 2000.

Operator Age

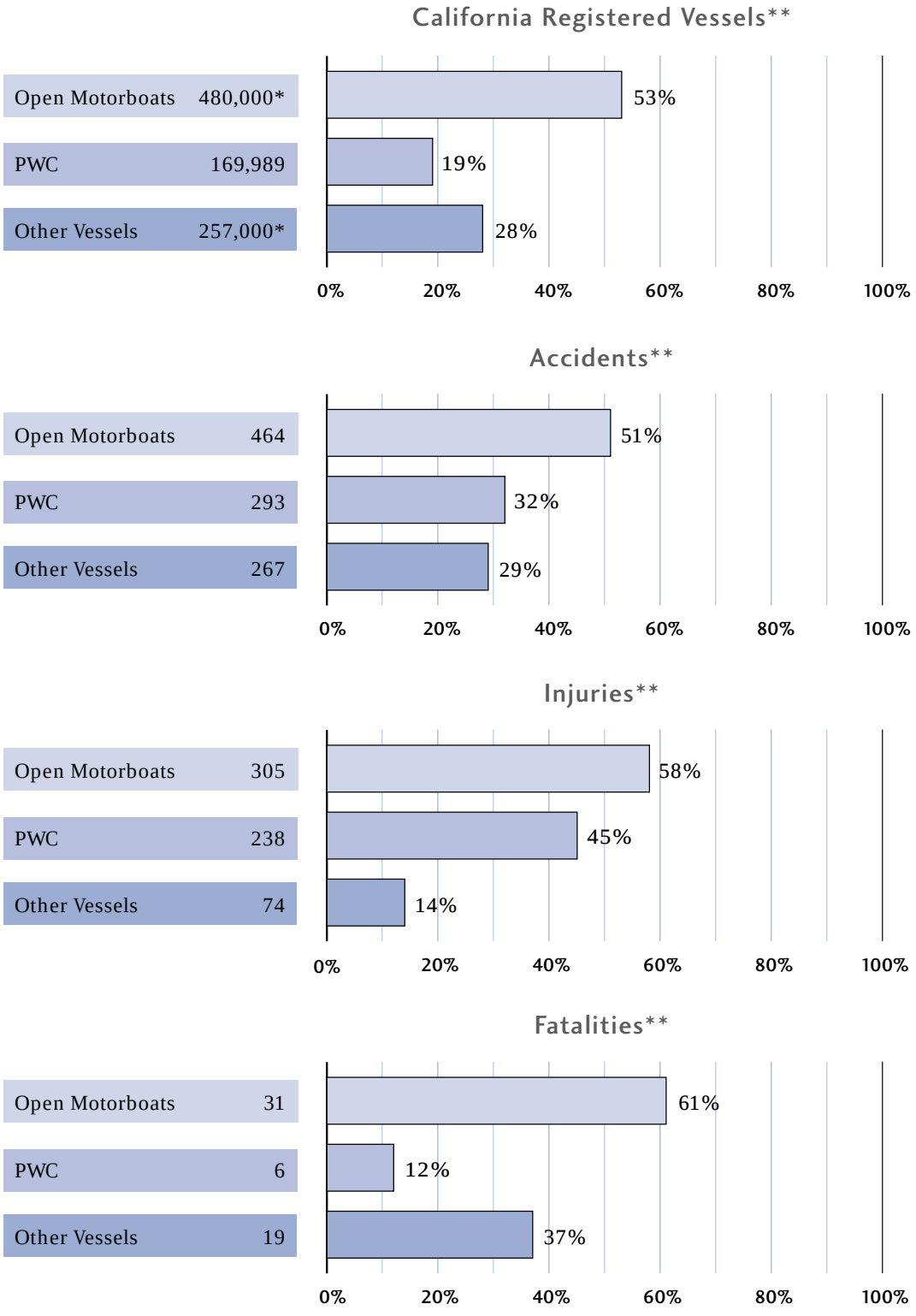
Overall, operators in the 31-40 age group were involved in accidents more often than those in any other age group. The 31-40 age group was involved most often in open motorboat accidents, followed by the 21-30 age group. Most PWC accidents involved operators in the 11-20 age group, followed by the 21-30 age group.

Operator Owner Status

45% of all vessels involved in accidents were operated by the registered owner. 38% of vessels were operated by someone other than the registered owner (27% were borrowed and 11% were rented).

Exhibit II-5

2000 Registration and Accident Statistics for Open Motorboats, PWC, and Other Vessels



* *These figures are estimates, based on the Department of Motor Vehicles registration categories.*

** *The sum of the percentages does not equal 100 percent because some accidents, injuries, and fatalities involve multiple types of vessels.*

C. Accidents Involving Personal Watercraft

Background

A personal watercraft is a small vessel that uses an internal combustion engine powering a jet pump or propeller. It is designed to carry from one to four persons, and to be operated by a person sitting, standing, or kneeling on the vessel rather than in the conventional manner of sitting or standing inside the vessel.

The use of a PWC is subject to all state, local, and federal regulations governing the operation of all powerboats of similar size.

As of December 31, 2000, there were 169,989 PWC registered in California, comprising 19% of registered vessels. The table below shows the total number of PWC registered in California from 1993 through 2000.

Findings

A total of 293 PWC-related accidents were reported in 2000, resulting in 238 injuries, 6 fatalities, and $436,650 in property damage. The total number of reported accidents and injuries were higher than 1999 levels (229 and 161 respectively) while the number of reported fatalities remained the same. The amount of property damage decreased from $384,050.

Exhibit II-6 (on page 20) presents an eight-year summary for PWC accidents, injuries, fatalities, and property damage.

Exhibit II-7 (on page 21) presents 2000 reported PWC-related accidents by county.

Accounting for 19% of registered vessels, PWC were involved in 12% of all fatalities and 14% of all property damage, but were involved in 32% of all accidents and 45% of all injuries.

Although accidents involving personal watercraft increased from 264 in 1999 to 293 in 2000, accidents involving them have decreased significantly (25%) since the 1997 boating season, during which there were 391 PWC-related accidents.

This decrease appears to be attributable mainly to two new laws affecting PWC that took effect in January 1998. The first law prohibited activities such as wake jumping within 100 feet of another vessel, spraying down other vessels, and playing "chicken." These activities now constitute endangerment of life, limb, and property. The second law raised the minimum age to operate a vessel of over 15 HP alone from 12

Personal Watercraft (PWC) Registration

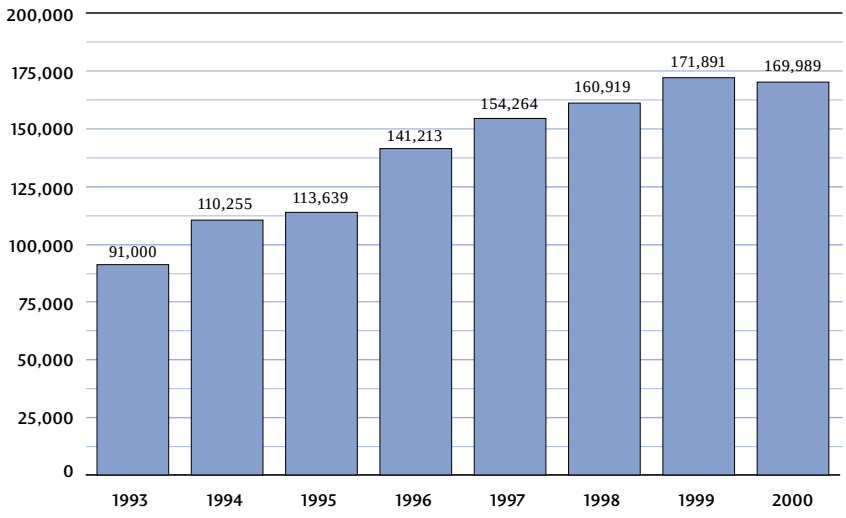


Exhibit II-6
1993-2000 PWC Accidents, Injuries, Fatalities and Property Damage*

Year	Number of Accidents	Number of Injuries	Number of Fatalities	Amount of Property Damage
1993	248	178	5	$306,900
1994	257	178	7	$294,800
1995	353	226	6	$579,550
1996	385	298	8	$508,300
1997	391	276	8	$709,450
1998	229	161	9	$384,050
1999	264	215	6	$447,550
2000	293	238	6	$436,650

* *An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; damage to a vessel or other property damage exceeds $500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.*

to 16 years of age. Since the vessel of choice of operators between 12 and 16 is the PWC, restricting this group's ability to operate vessels has resulted in a decrease in PWC-related accidents. This reduction in accidents is also discussed in *Accidents Involving Youths*, on page 26.

PWC accidents involving radical maneuvers such as wake jumping, donuts, and spraying other vessels fell from 88 in 1997 to 59 in 2000, a decrease of 33%.

Aaccidents involving youth operators fell from 120 in 1997 to 80 in 2000, a decrease of 33%.

Of the 6 PWC-related fatalities, collisions (33%) and falls overboard (33%) were the most common types of accidents.

Type and Cause of Accidents

Although PWC-related accidents have decreased considerably, types and causes of accidents involving PWC have remained consistent with findings from previous years.

Most reported PWC accidents involved collisions with other vessels (67%). 17% of accidents involved falls overboard, 5% involved vessels grounding and 5% involved persons being struck by boats/ propellers. Among collisions between two vessels, the second vessel was most often another PWC (64%).

The most common causes of all PWC accidents were operator inexperience (61%), excessive speed (50%), and operator inattention (42%). (Some accidents have more than one attributable cause.) All of these causes are operator-controllable factors.

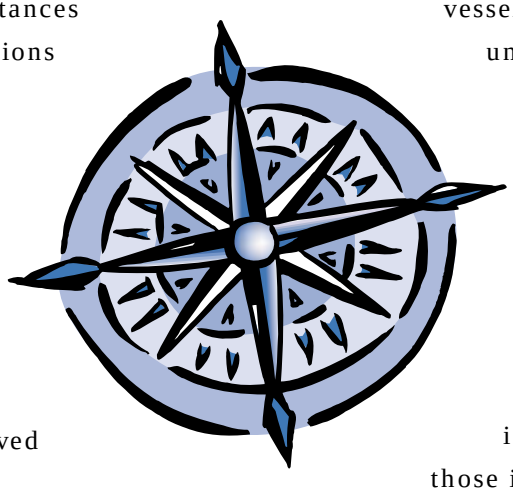
Exhibit II-7
2000 PWC-Related Accidents by County*

County	Number of Accidents	Number of Injuries	Number of Fatalities	Amount of Property Damage
Amador	2	1	1	$0
Butte	6	7	0	$7,500
Calaveras	15	9	0	$30,450
Colusa	1	0	0	$2,000
Contra Costa	4	3	1	$1,350
El Dorado	6	4	0	$15,900
Fresno	8	4	0	$23,000
Kern	9	5	0	$28,750
Kings	1	0	0	$1,600
Lake	10	10	0	$8,400
Los Angeles	31	23	0	$34,850
Madera	5	6	0	$5,500
Mariposa	1	1	0	$0
Merced	1	2	0	$0
Monterey	1	1	0	$600
Napa	13	8	0	$22,050
Nevada	1	2	0	$0
Orange	5	1	0	$4,950
Placer	11	8	0	$24,900
Plumas	1	1	0	$0
Riverside	20	16	1	$23,900
Sacramento	2	2	0	$1,550
San Bernardino	33	30	3	$48,000
San Diego	33	34	0	$21,450
San Joaquin	12	9	0	$14,900
San Luis Obispo	6	6	0	$3,000
Santa Barbara	1	0	0	$3,000
Santa Clara	4	6	0	$4,500
Shasta	11	11	0	$24,600
Solano	3	1	0	$3,400
Sonoma	1	0	0	$5,000
Stanislaus	9	6	0	$12,800
Trinity	3	3	0	$0
Tulare	4	4	0	$13,600
Tuolumne	12	7	0	$30,450
Ventura	1	1	0	$2,500
Yolo	2	4	0	$6,800
Yuba	4	2	0	$5,400
TOTAL	**293**	**238**	**6**	**$436,650**

* *An accident is considered reportable if: a person dies, disappears, or is injured requiring medical attention beyond first aid; damage to a vessel or other property damage exceeds $500; or there is complete loss of a vessel. Not all accidents are reported to the Department, due to either nonobservance or ignorance of the reporting law.*

** *The increase in boating accidents in Orange County when compared with accident totals appearing in reports prior to 1999 is not due to an increase in accidents, but rather an increase in the reporting of accidents to the Department.*

Of the 196 collisions between two PWC, 60 (31%) involved operators who knew each other and were riding together. Of that group, unsafe following distances contributed to 35% of collisions and 23% involved radical maneuvers (spraying other vessels, wake jumping, donuts, or playing "chicken").



Operator Age

PWC operators in the 11-20 age group were involved in more accidents than any other age group followed by the 21-30 age group.

Operator Owner Status

67% of PWC involved in accidents were operated by someone other than the registered owner (45% were borrowed and 22% were rented).

Boater Use Study

Several years ago, the Department noted the disproportionately high number of PWC-related accidents when compared to their registered numbers. For example, in 1994, PWC constituted 13% of the vessel population, but were involved in 36% of the accidents. However, if PWC spent more time underway than conventional boats, would the accident rate still be disproportionate? To answer this concern, the Department funded a study that was conducted by California State University Sacramento to survey boat owners to determine the amount of time boats were underway.

The study, conducted in 1995 and 1996, found that, for every day on the water, PWC spent 5.2 hours underway, while conventional vessels only spent 3.6 hours underway. However, when controlled for hours underway (that is, if conventional boats spent the same amount of time on the water as PWC), the study found that the number of accidents and injury-related accidents involving PWC still exceeded those involving conventional boats.

The number of PWC-related accidents has decreased substantially in the last three years. Therefore, to see if the above finding was still true, the 2000 accident data was used in combination with the use data from the study to generate the following statistics:

- Despite the decrease in PWC-related accidents, the number of accidents and injury accidents involving PWC continues to exceed those involving conventional vessels when controlled for hours underway.
- When controlled for hours underway, there would have been 1 accident for every 580 PWC operating on California waterways, compared to 1 accident for every 739 conventional vessels.

Representative Accidents

- Two PWC operators had been riding together. One operator fell overboard and was attempting to reboard his vessel. The second operator came over to assist him and did so at too great a speed, reduced the throttle, and then lost steering capability. He struck Operator 1 in the head and pinned his neck between the two vessels, causing further injuries.
- A PWC operator attempted to jump a wake and landed hard on the water, causing him to fall forward and lacerate his face on the steering console, and his passenger to strike her face on the back of the operator's head, knocking out her front teeth.
- The operator of a PWC was maneuvering in donuts at a high rate of speed which caused her passenger to lose her grip, fall overboard and sustain multiple contusions and injuries to her back.
- Two PWC operators were traveling together, one behind the other. The operator in the lead made a sudden U-turn, placing her in the path of vessel 2. Operator 2 was traveling less than 10 feet behind vessel 1 and could not avoid a collision. Operator 1 was rendered unconscious and also sustained a fractured pelvis.
- A PWC operator was maneuvering in the vicinity of several swimmers on swimboards attempting to make wakes for them to float over. She changed course to avoid a dog swimming in the water and in doing so, let off the throttle, and struck one of the swimmers in the head. He sustained a severe laceration requiring stitches.

Additional Safety Concerns

- Many PWC operators do not realize that when they let off the throttle, they lose steering capability. Numerous accidents have resulted from this lack of knowledge.
- PWC sometimes present a danger to their riders because of the craft's lack of visibility when it capsizes. Riders who are attempting to remount their PWC are often not visible to other watercraft, and are liable to be struck by other vessels.
- Rarely, lanyards present difficulties in accidents. In one case, the operator fell overboard and was injured, rendering him unable to swim back to the craft. Since the lanyard was on his wrist, the passenger was unable to maneuver the craft to retrieve him. In other cases, lanyards became detatched and could not be reattached quickly enough to avoid grounding or colliding with another vessel. These situations are rare, but noteworthy.

D. Accidents Involving Water Skiing

In this report, the term "water skiing" refers to all activities involving a vessel towing a person on a towline.

Findings

In 2000, a total of 146 accidents involving water skiing activities were reported to the Department, resulting in 145 injuries and 3 fatalities. The accidents accounted for 16% of all accidents, 28% of injuries, and 6% of fatalities. Water skiing accidents increased 36% compared with 1999 totals.

In recent years, the sport of water skiing has evolved beyond traditional water skiing and now encompasses the towing of inner tubes, wake boards, kneeboards, and air chairs. In 2000, accidents involving wakeboards exceeded traditional water skiing accidents for the first time. Wakeboarding activities were involved in 36% of water skiing accidents followed by traditional water skiing (34%), inner tubing (29%).

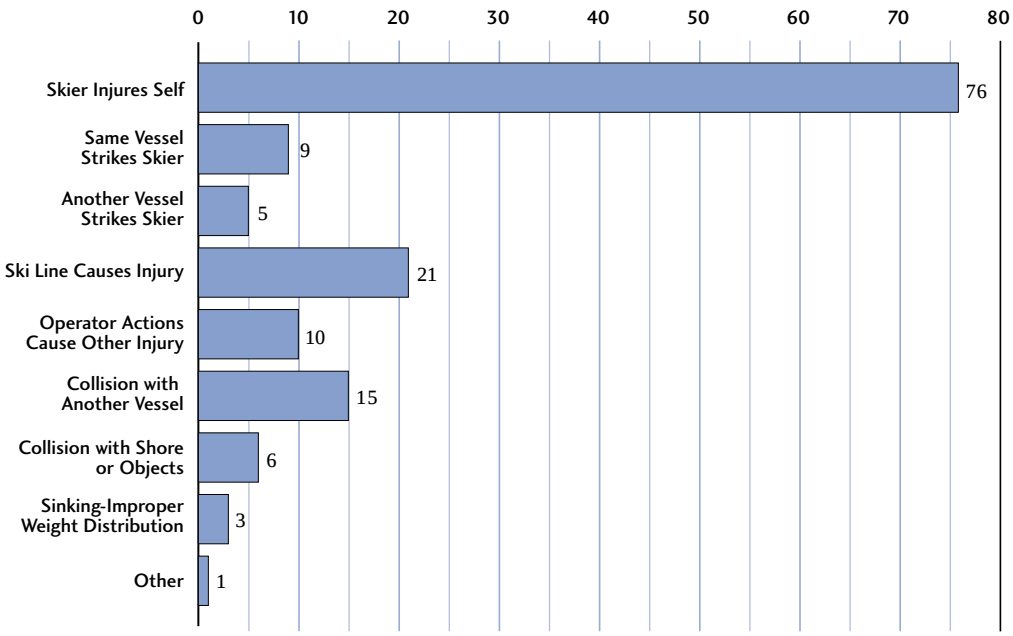
Type and Cause of Accidents

Exhibit II-8 (below) provides a breakdown of the 2000 reported water skiing activities by situation.

Water skiing accidents in which the skier was responsible for the accident accounted for the largest percentage of accidents (52%). These accidents most often involved inexperienced skiers who were injured while attempting to stand up or who attempted manuevers beyond their experience level.

Exhibit II-8
2000 Water Skiing Accidents

Total Water Skiing Accidents = 146



The remaining 48% of accidents involved operators engaging in a variety of unsafe behaviors both by operators towing skiers and also by other vessels operating in the vicinity of vessels towing skiers. The most common situations involved:

- Vessels not keeping appropriate distances from drifting vessels involved in assisting fallen skiers, thereby running over ski lines.
- Operators commencing operation of vessels while ski lines are still in the water, causing the lines to be entangled in the propellers.
- Operators coming too close to the shoreline while towing tubes, not realizing that the tubers cannot maneuver the tubes and causing them to strike the shoreline.
- Operators towing tubes in donuts to provide the tubers with more exciting rides, but instead, running over the ski lines and pulling the tubes into the propellers.
- Operators failing to notice that other vessels are towing skiers, causing collisions with skiers.
- Operators looking over their shoulders, watching skiers instead of relying on the observers, resulting in collisions with other vessels or the shoreline.

Representative Accidents

- The operator was towing 2 persons on a tube. As the tube traveled over a wake, the tubers flew into the air and struck heads, causing one to sustain a concussion.
- A vessel was stopped, loading a tuber into the vessel. The towline was extended and the ski flag was raised. A second vessel came into the area, also towing a skier, and crossed over the drifting vessel's extended towline, causing the line to become tangled in the vessel's propeller and pull taut. The tuber who was climbing into the vessel became entangled in the line and sustained lacerations.
- An operator towing a skier maneuvered the vessel in such a manner as to cause the towline to cross over another vessel, injuring two persons aboard that vessel as they came in contact with the line.
- An operator towed a skier through a line of buoys to allow the skier to use them as a slalom course, failing to realize that the buoys marked shallow water the vessel became grounded.
- A wakeboarder was attempting to do a flip, when one foot came out of the binding, causing his other leg to twist, resulting in a broken femur.

Time and Location

95% of water skiing accidents occured between May 1 and September 30. 75% of water skiing related accidents occurred in Northern California and 25% in Southern California. The most popular bodies of water were lakes (77%) followed by the Sacramento/San Joaquin Delta 11%.

Vessel Type and Length

96% of vessels involved in water skiing accidents were open motorboats. 82% were between 16 and 25 feet in length.

E. Accidents Involving Youths

Background

Throughout this report, "youths" refers to persons under 18 years of age.

From 1987 through 1997, California law required a person to be at least 12 years of age to operate a craft of more than 10 HP. If an operator was under 12, a person 18 years of age or older had to be on board the vessel.

In 1998, the law changed; it now requires the operator of a craft of more than 15 HP to be at least 16 years of age. Persons 12-15 may operate if a person of at least 18 years of age is attentively supervising aboard the vessel.

Note: Exceptions to this law include the operation of a sailboat that does not exceed 30 feet in length or a dinghy used directly between a moored boat and the shore, or between two moored boats.

Findings

During the 2000 boating season, youth operators were involved in 9% of all accidents, 14% of injuries, and 6% of fatalities. **Exhibit II-9** (below) presents an eight-year summary for youth operator accident statistics.

The number of accidents involving youths had remained consistent for three years prior to the 1998 boating season. However, since the previously mentioned operator age limit increase took effect in January 1998, there has been a substantial decrease in the number of accidents involving operators under 16 years of age. Accidents involving all youth operators decreased 33%, from 120 in 1997 to 80 in 2000.

Of the 94 youth operators involved in accidents, 47 (50%) were under the age of 16, and 6 were under the age of 12. Of the operators younger than 16 years of age,

Exhibit II-9
1993-2000 Youth Operator Accidents

Year	Total Number of Operators	Total Number of Accidents	Total Number of Injuries	Total Number of Fatalities
1993	77	67	51	7
1994	99	86	63	3
1995	135	110	80	1
1996	136	117	95	3
1997	140	120	87	2
1998	81	70	51	6
1999	73	63	56	2
2000	94	80	72	3

74% were operating illegally by either not having an adult on board, or, when the operator was younger than 12, operating the vessel under any circumstance.

Fatal accidents involving youth operators increased in 2000. Three youth operators were involved in fatal accidents, resulting in 3 fatalities. All three operators were 16 years old.

Type and Cause of Accidents

Collisions (68%) were the primary type of accident involving youth operators followed by grounding (10%) and falls overboard (8%).

The most common cause of accidents involving youth operators was operator inexperience (79%). Operator inexperience was a factor in only 42% of accidents involving operators of all ages. Excessive speed was the second most common cause, followed by operator inattention.

Vessel Type

The vast majority (89%) of youth operators involved in accidents were operating PWC.

Fault Assessment

Youth operators were involved in 54 collisions with other vessels. Most of these collisions (74%) involved youth operators colliding with adult operators. Youth operators were exclusively at fault in 60% of these collisions, compared to 18% for adult operators. An additional 15% of accidents between youth and adult operators involved shared fault and in 7% of accidents, information regarding fault was unknown.

Representative Accidents

- A 14-year-old operator of a PWC was repeatedly attempting to spray a relative on a second PWC. In attempting to do so, he crossed the second vessel's bow, resulting in the broadsiding of his vessel. He sustained severe internal injuries and had to be revived by CPR.
- Two youth operators (16 and 17 years of age) were traveling together on PWC, one behind the other. The operator of the lead vessel made an unexpected sharp turn, causing the passenger to fall overboard. The second operator had been following at an unsafe distance and was unable to avoid striking the passenger in the water. The victim sustained a broken nose and multiple lacerations to his face.
- The owner of an open motorboat illegally allowed a 9-year-old to operate the vessel and tow two people on kneeboards. The vessel was plowing through the water with the bow raised, restricting the operator's vision. Although there was an observer posted for the skiers, no one was seated in the bow to help spot hazards and the vessel broadsided a drifting vessel. Luckily, no one was injured in this accident.
- A 15-year-old operator of a PWC was very inexperienced and operating illegally without an adult on board. He misjudged the distance needed to make a turn near shore and grounded the vessel on the levee. He sustained lacerations to his scalp and broken fingers.

Additional Safety Concern

Very young children riding on PWC can present serious safety problems. While riding in front of an operator, a child has easy access to the vessel controls and can easily manipulate them. Such situations have resulted in accidents. Seating a young child behind a PWC operator is unsafe as well, because he or she can easily fall overboard.

F. Fatal Boating Accidents

Findings

In 2000, 51 fatalities occurred on California waterways. This represents 5.6 fatalities per 100,000 registered vessels. The number of fatalities increased from 42 in 1999 (4.4 per 100,000 registered vessels).

Type and Cause of Accidents

The most common type of fatal accident involved vessels capsizing (29%), and falls overboard (29%). Operator inattention (35%), operator inexperience (31%) and overloading/improper loading of vessels (20%) were the primary causes of fatalities. 78% of the victims drowned. Of that group, 80% were not wearing a life jacket.

Time and Location

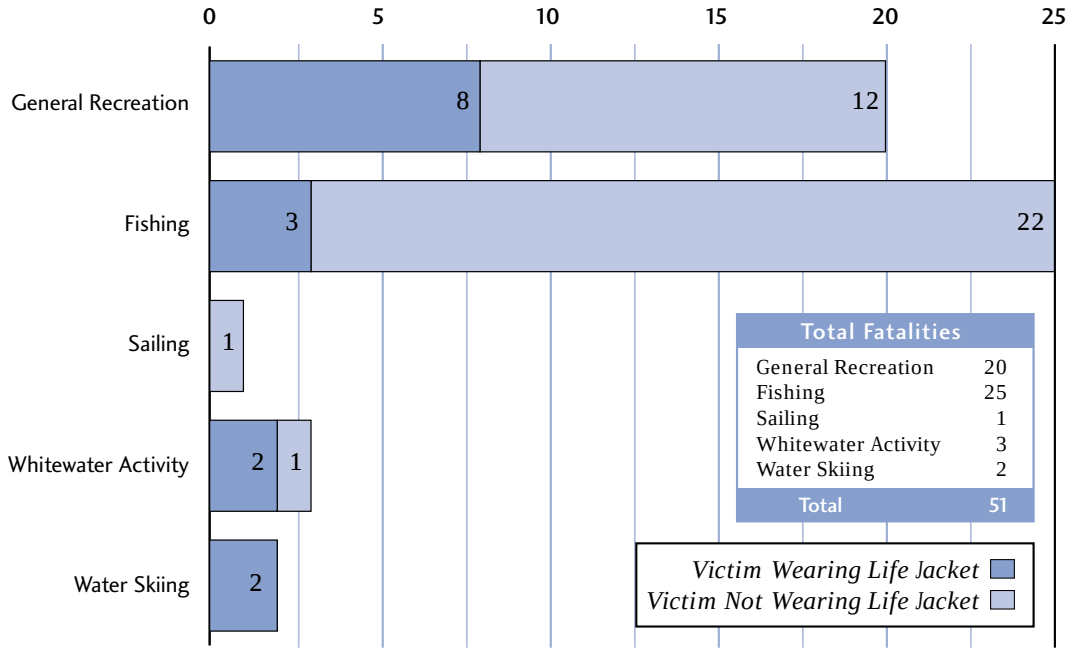
The largest number of fatalities occurred during April followed by June and July. Although California's temperate climate allows for year-round boating throughout much of the State, most boating activity, and therefore, most accidents, occur between May 1 and September 30. In 2000, however, a large number of fatalities (53%) occurred in the "off-season." Several accidents involving multiple fatalities occurred during this period. Additionally, 59% of these "off-season" fatalities occurred during fishing-related activities. Sixteen fatalities involving fishing occurred during this period compared with 6 in 1999. Fishing related fatalities are discussed in more detail later in this section.

Fatalities were only slightly more likely to occur during weekends. 39% of fatalities occurred on lakes, 31% occurred on oceans/bays, 16% occurred in the Sacramento/San Joaquin Delta region, 6% on the Colorado River, and 8% on other rivers throughout the State.

Vessel Type and Length

54% of vessels involved in fatal accidents were open motorboats, 15% were cabin motorboats, 13% were paddle craft and 13% were PWC. Even though PWC were involved in 32% of all accidents, they were not

Exhibit II-10
2000 Fatal Boating Accidents by Type and Life Jacket Usage



involved in nearly as many fatalities. PWC operators are more likely to wear life jackets, which may explain the lower fatality rate. Nearly all vessels involved in fatal accidents were less than 26 feet in length (89%).

Victim Activity

Exhibit II-10 (above) presents boating fatalities by type of activity and life jacket usage.

Nearly half (49%) of the victims involved in fatal boating accidents were on fishing trips at the time of the accident. Of these victims, 88% were not wearing a life jacket and drowned.

Fishing-related fatalities nearly doubled compared with the totals from the 1999 boating season.

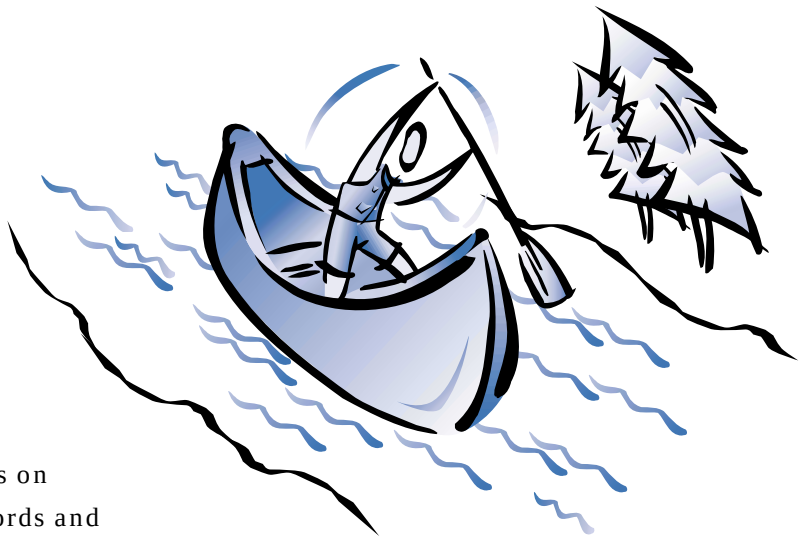
The vast majority (92%) of the victims were boating in Northern California. The most common location of these accidents were northern lakes (44%) followed by the Sacramento-San Joaquin Delta (28%) and the northern coast (16%).

Capsizing and falls overboard represented 72% of fishing-related fatalities. 24% of these fatalities occurred due to overloading/ improper loading, including sitting/standing on the gunwale, bow or transom. Of the 25 fishing-related fatalities, 16 were included in an analysis of alcohol-relatedness. Of these 16 fatalities, 8 (50%) were found to be alcohol-related. Boating accidents involving alcohol are discussedin greater detail later in this section.

Representative Accidents

- The operator and passenger were out fishing in a small open motorboat. The operator's fishing pole began to slip into the water, so he leaned out to grab it. At the same time, the passenger also reached out to grab it. Their shifting weight caused the vessel to capsize. Neither occupant was wearing a life jacket. The operator was unable to stay afloat and drowned.
- Several people were out fishing in a small, rented open motorboat. One of the passengers, who had been drinking heavily, stood up in the vessel and proceeded to the stern to retrieve a beer from a cooler. In doing so, he stepped onto the gunwale, which caused the vessel to capsize. He did not resurface and drowned. A small child aboard the vessel was hospitalized due to the effects of near drowning. No one on board was wearing a life jacket, although life jackets were on board the vessel.
- The operator of a PWC was cruising and suddenly made a U-turn placing him in a head-on situation with an open motorboat. The PWC operator's attention was diverted, as he was observing other vessels in the area and failed to take action to avoid collision. The operator of the open motorboat reduced speed and attempted to change course but could not do so quickly enough and a collision occurred. The PWC operator was killed on impact.
- Three people were attempting to cross a stretch of river in a canoe. The river was very rough and the canoe capsized. Two occupants made it to shore but one drowned. No one was wearing a life jacket. Although they normally wore life jackets, they had decided not to since they were only crossing the river, not going out for an extended period.
- The operator was returning from a day of fishing in a small open motorboat. As he neared the shore, he stood up, leaned toward the dock, lost his balance and fell overboard. He was not wearing a life jacket. The passenger, who could not immediately find a life jacket to throw to him, tried unsuccessfully to rescue him by extending a fishing net, and the operator drowned. He had been drinking all day and was found to have a blood alcohol level over the legal limit.

G. Alcohol Use and Fatal Boating Accidents



Background

In 1987, state law made it illegal to operate a recreational vessel with a blood alcohol level of 0.10% or more. In 1991, the legal limit was decreased to 0.08%. Furthermore, a "boating under the influence" conviction now appears on Department of Motor Vehicles records and can be used to suspend or revoke a vehicle driver's license.

For the purpose of this analysis, only fatal boating accidents were analyzed for alcohol relatedness. A person with a blood alcohol level of 0.035% or higher is assumed to be "under the influence." The National Transportation Safety Board has determined that when the concentration of alcohol in a person's bloodstream reaches this level, noticeable changes in judgment and operational competency occur.

As was discussed earlier (on page 12), testing was not conducted on all victims due to delayed accident reporting or delayed body recovery, which can alter blood alcohol levels.

Findings

Of the 51 fatalities, blood alcohol information was available in 31 of the cases. Of these 31 victims, 12 (39%) had blood alcohol levels equal to or greater than 0.035%.

Type and Cause of Accidents

All of the fatalities were the result of single-vessel accidents. All of the victims drowned and none were wearing life jackets. The majority (75%) involved capsizing or falls overboard. Operator inattention (33%) and improper loading (33%) were the leading causes of accidents.

Type of Vessel

A total of 11 vessels were involved in these accidents, 10 of which were motorized. Of these vessels, 6 were open motorboats, 3 were cabin motorboats, and 1 was a paddle craft. 82% of the vessels were less than 26 feet in length.

Time and Location

Of the 12 alcohol-related fatalities, 42% occurred on weekends throughout the year. 9 occurred in Northern California and 3 in Southern California.

Activity

Of these fatalities, 8 (67%) were involved in fishing-related activities.

Profile of Intoxicated Boaters

An examination of the 12 fatalities reveals that 8 of the 12 victims were passengers who contributed to their deaths due to poor judgment related to alcohol consumption. In some cases, passengers moving around in the vessel fell overboard and drowned. In another case, a passenger stood up, causing the vessel to capsize, resulting in his drowning and others on board sustaining serious injuries.

These situations underscore the Department's long-held view that a sober operator does not ensure passenger safety. Intoxicated passengers in or around vessels are exposed to dangers that would not affect the safety of intoxicated passengers in a vehicle. The "designated driver" concept, which is popular in some boating safety literature, has its roots in automobile safety where the possibility of falling overboard and drowning (or in some years, swimming too close to the propeller) is not a factor. Therefore, based upon the findings of these fatalities and others from other years, the Department recommends that neither operators nor passengers drink alcoholic beverages while boating.

Alcohol-Related Fatalities Involving Motorized Vessels

In January 1986, the Department submitted the Boating Safety Report to the California Legislature. This report analyzed alcohol-related boating accidents between November 1, 1983 and October 31, 1985, and concluded that 59% of all fatalities involving motorized vessels were alcohol-related (where testing could be conducted).

The Department conducted a second alcohol-related boating accident study between January 1, 1993, and December 31, 1994. This study concluded that 23% of all fatalities involving motorized vessels were alcohol-related, a significant reduction from the 1986 study.

Table II-1 (below) shows the percentage of alcohol-related fatalities involving motorized vessels (where alcohol-related testing could be conducted) from 1993 to 2000. In 2000, 28 of the 31 victims tested for alcohol-relatedness were killed in accidents involving motorized vessels. Of that group, 11 (39%) were alcohol-related.

Table II-1

Percetages of Alcohol-Related Fatalities Involving Motorized Vessels	
1993	33%
1994	11%
1995	34%
1996	39%
1997	48%
1998	14%
1999	25%
2000	39%

Section III

Boating Law Enforcement Programs

In support of the Department's mission to provide leadership in promoting the public's right to safe and enjoyable boating on California waterways, the Enforcement Unit's primary objectives are:

- To provide for adequate boating law enforcement through local agencies
- To ensure that the enforcement of California boating laws is uniform throughout the state

The Enforcement Unit meets these objectives through programs that provide officer training and financial aid to local boating law enforcement agencies.

A. Financial Aid Program

The Department's financial aid program provides supplemental funding to local Governments, usually for county sheriff boating patrol units. The funding supports enforcement of State laws and regulations and local ordinances affecting boating activities, inspection of vessels, supervision of water events, search and rescue operations, and recovery of drowned bodies.

During FY1999/00, the Department allocated $8.1 million in funding to 35 counties and 2 cities for boating law enforcement operations including maintenance, equipment, and personnel costs. **Exhibit III-1** (on page 34) presents a summary of services supported during this period by the financial aid program.

Boating law enforcement officers provide important safety education to the boating public. The Department's partnerships with the law enforcement community provide the Department with an excellent resource to help educate and communicate with the recreational boater.

Exhibit III-1
Services Supported by the 2000 Financial Aid Program

Regulation Enforcement	
Verbal Warnings	53,695
Citations	8,735
Physical Arrests	631
Boater Assistance	
Persons Assisted	23,575
Vessels Assisted	16,010
Accident Investigations	783
Search and Rescue Operations	
Searches	1,315
Body Recovery Attempts	67
Boating Safety Presentations	3,835
Vessel Inspections	65,805
Organized Boating Event Supervision	309

In FY1999/00, law enforcement officers provided boating safety education to more than 63,000 vessel operators, primarily by means of public contact and verbal warnings, which act as teaching tools to give the boater more knowledge and help prevent accidents.

B. Law Enforcement Training Program

In California, boating law enforcement is decentralized. There are more than 100 public agencies throughout the State that enforce California's boating laws. Consequently, the interpretation of boating laws could vary from agency to agency, making it confusing for the State's boaters. However, the Department provides an extensive marine law enforcement training program to ensure that boaters can expect uniform law enforcement on waterways throughout the state.

During 2000, the Department conducted 19 one-week classes (760 hours) throughout the State and trained nearly 500 marine patrol officers. These courses are designed for law enforcement personnel and are taught by law enforcement specialists who bring great expertise and credibility to the training program.

The Department offers training classes in the following areas:

- Seamanship–Rescue Boat Operations
- Boating–Basic Skills Training
- Coastal Piloting and Navigation
- Marine Firefighting
- Basic Boating Safety and Enforcement
- Boating Accident Investigation/Reconstruction
- Boating Intoxication Enforcement